

*The National Academies of*  
SCIENCES • ENGINEERING • MEDICINE

Elizabeth A. Eide, Ph.D.  
*Executive Director*  
Division on Earth and Life Studies

February 18, 2022

RE: NAS Proposal No. 10005791

Robin R. Clarke  
Contracting Officer  
Office: ORD/OSA/IO  
William Jefferson Clinton Building  
1200 Pennsylvania Avenue, NW  
Mail Code: 8150R, Rm No. 41231  
[clarke.rob@epa.gov](mailto:clarke.rob@epa.gov)

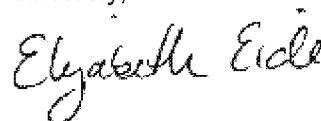
Dear Ms. Clarke,

In response to Solicitation 68HERC22R0080, we are pleased to submit the enclosed proposal on behalf of the National Academy of Sciences, a private Federally chartered tax-exempt corporation, prepared by Division on Earth and Life Studies Executive Office, requesting partial support for the *Environmental Health Matters Initiative--Provision of Scientific and Technical Expertise for Environmental Public Health Issue Workshops/Business Meetings*. The total estimated cost of this project is \$1,039,795 for the period from March 14, 2022 to March 13, 2024, of which the Environmental Protection Agency is requested to provide \$400,000.

The director for this project is Dr. Kavita Berger, Director of the Board on Life Sciences, and the responsible staff officer for this project is Dr. Audrey Thevenon, Senior Program officer of the Board on Life Sciences. Dr. Berger may be reached at 202-334-3360 and Dr. Thevenon may be reached at 202-334-2814 regarding program matters. Business negotiations are the responsibility of Russell Walker, Contract Manager, Office of Contracts and Grants. He may be reached at 202-334-2004.

We shall appreciate your consideration of this matter.

Sincerely,



Elizabeth A. Eide, Ph.D.  
Executive Director

*The National Academies of*  
**SCIENCES • ENGINEERING • MEDICINE**

DIVISION ON EARTH AND LIFE STUDIES EXECUTIVE OFFICE

Proposal No. 10005791

Contract #68HERC19D0011; PR-ORD-21-02540; SOL 68HERC22R0080

**ENVIRONMENTAL HEALTH MATTERS INITIATIVE**

**PROVISION OF SCIENTIFIC AND TECHNICAL EXPERTISE FOR ENVIRONMENTAL PUBLIC HEALTH ISSUE  
WORKSHOPS/BUSINESS MEETINGS**

FEBRUARY 2022

**Russell  
Walker**

Digitally signed by Russell Walker  
DN: cn=Russell Walker, o=National  
Academy of Sciences, ou=Office of  
Contracts and Grants,  
email=rwalker@nas.edu, c=US  
Date: 2022.02.18 10:07:36 -05'00'

for

James R. Burke  
Director  
Office of Contracts and Grants  
National Academy of Sciences  
Telephone: (202) 334-2428  
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Dr. Kavita Berger  
Board Director  
Board on Life Sciences  
Division on Earth and Life Studies  
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This proposal is submitted by the NATIONAL ACADEMY OF SCIENCES (NAS), which assumes full technical and legal responsibility under its Act of Incorporation for the work to be carried out under any resultant agreement. The NAS is a private Federally chartered corporation exempt from federal income tax under Internal Revenue Service Code section 501(c)(3). The NAS Taxpayer Identification Number is 53-0196932. DUNS Number is 04-196-4057. **Awards resulting from this proposal should be issued to NATIONAL ACADEMY OF SCIENCES and payment directed to:**

**National Academy of Sciences**  
Accounting Office  
ATTN: Cash Management Section  
500 Fifth Street, NW  
Washington, DC 20001  
Telephone: 202-334-3351 or 202-334-1476

(rev. 7/7/15)

*The National Academies of*  
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**PROPOSAL NUMBER: 10005791**  
**SOLICITATION NUMBER: PR-ORD-21-02540**

**ENVIRONMENTAL HEALTH MATTERS INITIATIVE**

**STATEMENT OF TASK**

The Environmental Health Matters Initiative (EHMI) enhances the nation's ability to alleviate harmful environmental impacts on human health. This innovative endeavor marshals the leadership and intellectual capacity of the National Academies of Sciences, Engineering, and Medicine's (National Academies') seven program divisions and associated volunteers, supplemented by a breadth of contributions from multiple sectors to develop novel approaches that incorporate the synergies needed to tackle intractable problems. The EHMI is a new mechanism for scientific experts and leaders in the corporate world, government, academia, and other sectors to work together with impacted communities to examine available information and catalyze innovative solutions to alleviate the nation's most significant environmental health challenges.

The EHMI committee, liaison group, and other participants will:

- (1) explore the complexity of environmental health challenges,
- (2) identify opportunities where progress can be made,
- (3) catalyze the development of holistic and sustainable opportunities, and
- (4) provide rapid expert input when crises demand

via topic-focused meetings and workshops where participants from diverse background and expertise share relevant background information, discuss the scope of the issue, and consider the issue comprehensively from the viewpoint of multiple disciplines and sectors in order to better understand the system of interacting factors at play. The outcome will be an "opportunities for progress" document that maps ideas and set of actions for each topic.

**PROJECT BACKGROUND**

**Complexity of Issues**

The consequences of climate change at home and abroad<sup>1</sup>, the exposures to environmental stimuli (e.g., chemicals and infectious agents), and other stressors take a heavy toll on human health, with numerous communities in the United States disproportionately impacted. Given the complex interactions between human health and the environment, consideration of human health and environmental justice need to be factored into a broad array of activities, including transportation planning, community engagement, environmental remediation, chemical design and use, and decision-making at the community, state, and national levels.

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<sup>1</sup> In support of Executive Order 14008. See: <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>

At the same time, our scientific ability to address such complex issues is improving. Taking advantage of the scientific advances, developing sustainable approaches and proposing strategic and actionable solutions will require bringing together multiple disciplines, sectors, and communities to work across traditional boundaries and develop systems-based approaches for furthering the sciences and the translation of knowledge to action. The National Academies' Environmental Health Matters Initiative (EHMI) catalyzes such work and provides leadership on intractable challenges in environmental health. Attachment A includes the EHMI strategy.

## **PROPOSED STATEMENT OF WORK**

To address critical challenges in environmental health; the National Academies proposes to conduct: a) three workshops a year, two of which are part of a 4-part Communities, Climate, and Health series and one of which is issue-specific; b) bimonthly business meetings to discuss emerging issues that need to be addressed; and c) mobilize expertise in the event of a National Environmental Crisis. To achieve this, the National Academies will conduct the following tasks.

**Task 1. Kick-off.** A kick-off teleconference between EPA and NAS with the Task Order Contracting Officer Representative (TOCOR), and relevant Office of Research and Development/Immediate Office of the Assistant Administrator (ORD/IOAA) management and technical staff will be convened to review the scope of work. This kick-off teleconference shall occur within seven (7) days of acceptance of this task order.

*Subtask 1.1.* NAS will prepare a **milestone timeline** with expected timing of EHMI business meetings and issue-specific meetings within 30 days of task initiation. The EPA will review and provide feedback on the timeline as needed before Milestone Timeline acceptance. Updates to the milestone timeline shall be provided quarterly to the TOCOR, Contract Level Contracting Representative, Contracting Officer, or other relevant EPA staff designated by the TOCOR.

**Task 2: EHMI Business Meetings.** NAS will convene and facilitate bi-monthly EHMI business meetings, with the SMEs specified in Task 3. At the first and seventh business meeting, using scenario planning and strategic forecasting activities SMEs will identify a minimum of 5 high-level environmental, public health issues that are cross-cutting and have impact across federal and state agencies and in the public and private sectors. At each meeting, strategies and goals for addressing these cross-cutting issues will be discussed, including the planning for topic-focused meetings. The SMEs will prioritize the identified environmental public health issues, based on level of importance to public health and need for resolution. The identified environmental public health issues would become the basis for each subsequent bimonthly business meeting and the issue-specific workshops, scheduled based on the issue's priority.

*Subtask 2.1* Upon conclusion of each business meeting NAS shall provide a brief description of topics discussed, including action items or next steps to the TOCOR or other relevant EPA staff designated by the TOCOR within 15 days.

**Task 3. Subject matter experts (SMEs).** NAS will provide subject matter experts (SMEs) to serve on the EHMI steering committee, to serve at business and topic-focused meetings.

*Subtask 3.1:* NAS will seek input from the scientific community, the public, and a broad range of relevant stakeholders to provide the TOCOR a proposed list of a minimum 30 SMEs for multi-part workshops and a minimum of 15 SMEs for single priority workshops. NAS will determine who will participate in each meeting or workshop, based on the expertise of the SMEs. NAS will deliver a final list of participants for each meeting to the TOCOR.

*Subtask 3.2:* A multidisciplinary committee of recognized experts (15) in fields relevant to the request has been identified to represent a range of broadly recognized views on issues. NAS will provide the TOCOR with the current list of committee member SMEs including a biographical sketch and area of expertise for each SME. The committee will be updated periodically.

#### **Task 4: Topic-Focused Meetings.**

NAS shall develop, convene, and facilitate three (3) issue-specific workshops per year in which two (2) the first year and one (1) the second are part of a cumulative information 4-part series supporting Communities, Climate Change, and Health Equity and one (1) workshop the first year and two (2) the second year that shall focus on one of the identified environmental public health issues, as specified in Task 2, that was determined in coordination by EPA as EHMI sponsor, other EHMI sponsors, and EHMI committee during the bimonthly meetings. These issue-specific workshops will include the SMEs specified in Task 3, as well as an appropriate ratio of other, invited, topic-specific experts (identified by the SMEs) from across the federal, state, private and public sectors to alleviate potential bias. In support of Executive Order 14008: Tackling the Climate Crisis at Home and Abroad, these workshops will be a series of public workshops to explore specific actions that can be taken when working with communities and other stakeholders to improve climate-related health outcomes and reduce health disparities. Gaps in research to achieve these goals can also be discussed. The workshop series will bring insights from leaders and innovators from vulnerable communities that are adversely and disproportionately impacted and offer a platform to foster connections with decision-makers from multiple sectors. Invited presentations will explore the actors and actions that can help advance the design and investment in health equity in the natural and built environments. In developing the workshop series, the planning committees will consider:

1. The state of knowledge on the health effects of climate change on vulnerable communities in the United States that are disproportionately impacted, along with existing and promising research, resources, policies, and design strategies from government, industry, and communities;
2. Community initiatives that have sought to address climate-related health inequities in disproportionately impacted communities; and
3. Opportunities for decision-makers, leaders, and stakeholders at the national, state, and local levels to collaborate with communities to close capacity gaps and design constructive solutions to climate-related health disparities.

The series will culminate in a public discussion on the information presented, integrating innovative approaches to maximize engagement with communities, and will explore pathways available for decision-makers, researchers, and planners at all levels to design equitable solutions to the public health consequences associated with the climate crisis, including future research possibilities and opportunities for action.

*Subtask 4.1:* Upon conclusion of each issue-specific workshop, NAS shall provide written comments of the meeting including action items or next steps to the TOCOR or other relevant EPA staff designated by the TOCOR within 15 days

**Task 5: Topic-Focused Meeting in Event of National Environmental Crisis.** In the event of a national environmental crisis, NAS will convene a meeting of experts within 7 business days under the auspices of the EHMI committee and include external SMEs whose knowledge can contribute to assessing the crisis and specific actions, if needed. If the outcomes of this meeting highlights a clear need to conduct a larger workshop, NAS will consider planning the issue-specific workshop (Task 4) on a topic critical to the crisis.

*Subtask 5.1.* Within 15 days of the crisis, NAS will provide to the TOCOR, or other relevant SPA staff designated by the TOCOR, the transcript of the ad hoc meeting of experts convened to discuss the crisis and actions.

**Task 6: Logistics for Participants.** NAS will provide for the participation of qualified experts as discussed for EHMI business meeting(s), environmental public health issue workshop(s), and ad hoc environmental crisis issue meetings, within 30 days prior to each meeting or workshop. Make all arrangements for transportation, lodging and logistical support for each expert to participate in the meetings or workshops, which shall be held in Washington, D.C. or another location specified by EPA.

## PROJECT TIMELINE

The period of performance is 24-months. The approximate schedule of tasks is included in the table below.

	Year 1						Year 2					
	2	4	6	8	10	12	14	16	18	20	22	24
Kick-off Meeting (Task 1)												
Milestone Table (Subtask 1.1)												
EHMI Business Meeting (Task2)												
Summaries of Business Meetings (Subtask 2.1)												
SME List (Task 3)												
Seek Input on SMEs (Subtask 3.1)												
List of SMEs (Subtask 3.2)												
Workshop 1 Community & Climate Change #2 (Task 4)												
Proceedings-in-Brief of Workshop 1 (Subtask 4.1)												
Workshop 2 Issue-Specific (Task 4)												
Proceedings-in-Brief of Workshop 2 (Subtask 4.1)												
Workshop 3 Community & Climate Change #3 (Task 4)												
Proceedings-in-Brief of Workshop 3 (Subtask 4.1)												
Workshop 4 Issue-Specific (Task 4)												
Proceedings-in-Brief of Workshop 4 (Subtask 4.1)												
Workshop 5 Community & Climate Change #4 (Task 4)												



- C) Research Support: Ms. Abigail Ulman will develop background research on environmental health issues and trends related to the topics identified and prioritized for issue-specific workshops. She will assist in the development of workshop reports and other written or digital deliverables, and communication material.
- D) Administration Support: Ms. Emma Schulman will perform clerical and administrative duties, including coordinating logistical and administrative aspects of virtual and in-person meetings and website updates.
- E) Core Cross-Divisional Staff Team The core cross-divisional staff team will be involved in the planning and staffing of the initiative as a whole. Once specific topics are selected, the appropriate staff will work on identifying and recruiting the best experts and leaders, identifying and capturing relevant information on the topic to provide background before the meeting, and planning and capturing meeting results. The core cross-divisional staff team consists of the following, with short biographies of each provided in Attachment B. [\* indicates communication team member.]
- Earth and Life Studies: Kavita Berger, Audrey Thévenon, Abigail Ulman, Emma Schulman, Alex Reich, Kossana Young, Amanda Staudt
  - Health and Medicine: Kathleen Stratton, Scott Wollek
  - Behavioral and Social Sciences and Education: Holly Rhodes
  - Engineering and Physical Sciences: Beth Zeitler
  - Transportation Research Board: Lida Beninson
  - Policy and Global Affairs: Franklin Carrero-Martinez
  - Gulf Research Program: Charlene Milliken, Daniel Burger
  - National Academy of Engineering: David Butler

### **Broader Subject Matter Staff Involvement**

As specific topics are discussed and developed, additional staff from the appropriate divisions will be involved to provide relevant subject matter expertise and connections to relevant volunteers.

In addition, a senior finance business partner will provide financial support and tracking and general oversight. Guidance will be provided by the director of the National Academies' Board on Life Sciences.

### **ANTICIPATED COSTS AND PERFORMANCE PERIOD**

The total funding for the project will cover the staff time necessary to plan and implement the work. In addition, support for travel and other direct costs for meetings, workshops, and publications are included.

Performance Period 2: March 14, 2022 – March 13, 2024

The total estimated cost of 24-months of activity is \$1,039,795. This proposal requests EPA provide \$400,000 for the fifth and sixth year of this initiative. The CDC and the NIEHS are providing a total of \$350,000 until Fall 2022. Additional funding at the same level from these sponsors will be solicited. Additional funds are in place from foundations and industry partners, including ExxonMobil and the National Academy of Sciences' Arthur L. Day Fund. Additional funds from other government agencies, foundations, and private partners will be solicited in Spring 2022. The funds requested from EPA would support a portion of staff time related to completion of work, meeting planning and travel logistics and a smaller portion of the cost of the travel of study committee members and experts invited to in-person or hybrid meetings. Consultant agreements are expected for a meeting facilitator



and a science writer. Subcontracting for webcasting of select meetings, to be determined by topic and meeting goal, is included.

## PUBLIC INFORMATION ABOUT THE PROJECT

In order to afford the public greater knowledge of National Academies activities and an opportunity to provide comments on these activities, the National Academies will post on its website ([www.national-academies.org](http://www.national-academies.org)) the following information about the project as appropriate under its procedures: (1) notices of meetings open to the public; (2) brief descriptions of projects; (3) committee appointments (including biographies of committee members); (4) report information; and (5) any other pertinent information.

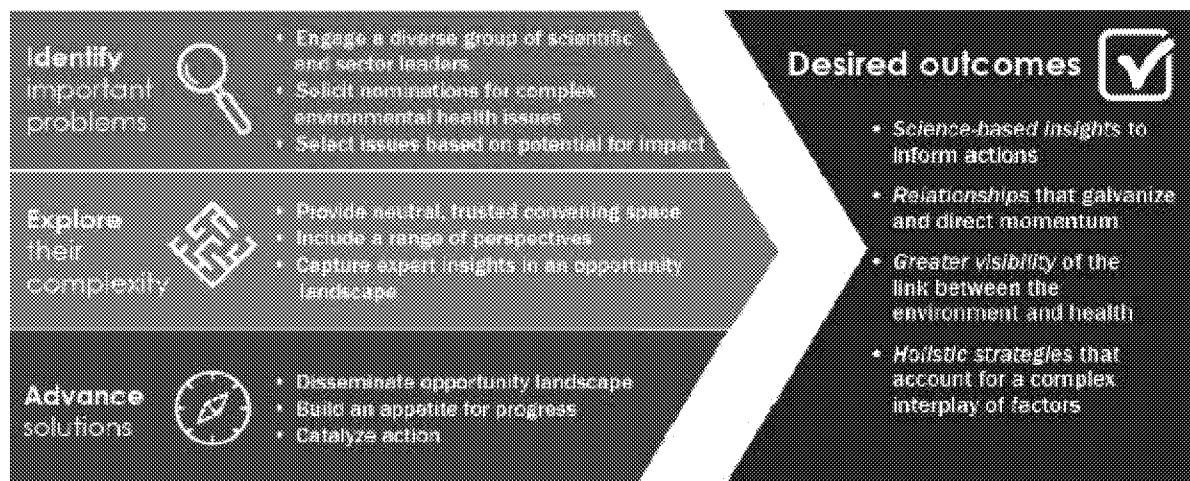
## FEDERAL ADVISORY COMMITTEE ACT

Section 15 of the Federal Advisory Committee Act, 5 U.S.C. App., Section 15, does not apply to the activities described in this proposal. Section 15 of FACA restricts agency use of any advice or recommendations provided by the Academy that were developed by use of an Academy committee under an agreement with a Federal agency unless certain requirements are met. Those requirements do not apply to the work described in this proposal because the work does not involve either the use of an Academy committee or the provision of any advice or recommendations to a Federal agency.

## Attachment A

### Working Strategy for EHMI

The EHMI aims to enable various sectors to harness and mobilize cross-sector and transdisciplinary knowledge and strategies that take into account a holistic view of the factors at work in complex environmental health challenges and opportunities. This will be accomplished by providing the structure for scientific experts and stakeholder leaders to explore the complexities of different issues and advance solutions, as described here.



#### 1) Identify Important Problems

*Committee Appointment and Involvement of Other Experts and Leaders.* The first step in identifying important problems to tackle was appointing a committee of visionary leaders from a broad range of disciplines and sectors. A high-level group of leaders from industry, foundations, government, and academia served as the steering committee and liaisons that developed this activity. Additional participants from academia, industry (consumer products, chemical manufacturing, etc.), foundations, state and local organizations, and other sectors have been recruited to serve on the steering committee<sup>2</sup> as the activity moves into the future. Steering committee members are selected on the basis of their expertise and perspectives. The committee is supplemented by a liaison coordination group that includes activity supporters and leaders of organizations that are important in effecting change or contributing to the dialogue. For example, leaders of federal agencies, business (e.g., retail, manufacturing, and energy), nongovernment organizations, local and state public health groups, and foundations will be recruited to serve on the liaison coordination group. For each topic selected, additional sector and disciplinary perspectives will be included to supplement the committee in the scoping and planning.

*Identifying Important Problems to Tackle.* The EHMI committee's purpose is to take on complex challenges. Problems vary in terms of what attributes make them complex—some will be recalcitrant issues where the science base is clear but is not sufficiently translated to action, while others will be more forward-looking and delve into unexplored science and technology solutions. Topics that have been suggested by participants and an informal request for input include: reducing childhood lead exposure; addressing environmental contamination of by persistent chemicals; identifying health impacts of industrial agriculture; considering health risks and benefits of transportation and energy choices; understanding the intersection of environmental health with emerging infectious disease; and assessing the impacts of climate change on human health.

In the first four years of the EHMI, topics were selected by the committee with liaison input by considering the following criteria: Scope and Distribution of Potential Exposure, Urgency for Guidance or Input, Feasibility of Identifying and Advancing Solutions, and Need for Multisector and Multidisciplinary Approaches. This process has produced the following EHMI workshops:

- Identifying Opportunities to Understand, Control, and Prevent Exposure to PFAS: Workshop from the EHMI
- Quality Water from Every Tap: A Workshop from the EHMI
- Airborne Transmission of SARS-CoV-2: An EHMI Virtual Workshop
- Reducing the Health Impacts of the Nitrogen Problem: An EHMI Virtual Workshop Series
- How We Move Matters: Exploring the Connections between New Transportation and Mobility Options and Environmental Health--A Workshop Series by the EHMI
- Communities, Climate, Health Equity: A New Vision

## 2) Explore Complexity of Challenges

Starting in year 5, new problems will be explored by scoping issues before the meetings; providing a neutral, trusted convening space; including a range of perspectives; and using a structured systems approach for each topic to explore its complexities. The complexity and concepts developed will be captured as workshop proceedings in an innovative format, referred to as "opportunities for progress" (please see below).

*Scoping the Issues.* Central to the EHMI process will be the scoping of the selected problem to determine with sufficient specificity the questions to be discussed at a topic-focused meeting. This scoping will be accomplished by soliciting input on the key issues from the environmental health community, the committee and liaisons, and leaders in related disciplines during bimonthly meetings. Such scoping will also be facilitated by describing the

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<sup>2</sup> See <https://www.nationalacademies.org/our-work/environmental-health-matters-initiative#sectionCommittee>

science and related context or controversies in a background presentation, prepared by a commissioned external scientist or National Academies staff.

In mid-2021, the EHMI committee and liaisons decided to focus on a two-year effort around Communities, Climate Change, and Health Equity. As such, an ad hoc planning committee, convened by the National Academies of Sciences, Engineering, and Medicine, will organize a series of public workshops to explore specific actions that can be taken when working with communities and other stakeholders to improve climate-related health outcomes and reduce health disparities. Gaps in research to achieve these goals will also be discussed. The workshop series will bring insights from leaders and innovators from vulnerable communities that are adversely and disproportionately impacted and offer a platform to foster connections with decision-makers from multiple sectors. Invited presentations will explore the actors and actions that can help advance the design and investment in health equity in the natural and built environments. In developing the workshop series, the planning committees will consider:

1. The state of knowledge on the health effects of climate change on vulnerable communities in the United States that are disproportionately impacted, along with existing and promising research, resources, policies, and design strategies from government, industry, and communities;
2. Community initiatives that have sought to address climate-related health inequities in disproportionately impacted communities; and
3. Opportunities for decision-makers, leaders, and stakeholders at the national, state, and local levels to collaborate with communities to close capacity gaps and design constructive solutions to climate-related health disparities.

The first workshop of the series was held in October 2021<sup>3</sup>. The series will culminate in a public discussion on the information presented and will explore pathways available for decision-makers, researchers, and planners at all levels to design equitable solutions to the public health consequences associated with the climate crisis, including future research possibilities and opportunities for action. Proceedings in brief capturing the presentations and discussions from each workshop will be prepared by a designated rapporteur in accordance with institutional guidelines. Insights will also be captured and organized by actor and sector in a digital, user-friendly workshop guide. The workshops will not produce conclusions or recommendations.

Additionally, there will be two workshops in calendar year 2022 that are not the Climate and Health Series. The topics for these workshops and their timing were discussed by the EHMI committee in early 2022. Commitments have been made for FY22 to allow for a majority of the scope of EHMI activities (2 Climate and Health Workshops and 2 TBD workshops) to take place.

*Structured Approach.* A structured approach will be used to explore complexities and identify opportunities for each workshop in the series. Meeting participants will systematically consider questions designed to explore the full dimensions of issues. For example, participants will consider (1) what are the scientific questions that need to be answered to make progress, (2) what are the types of established actions and interventions, and what actions and intervention spaces need to be developed, (3) what are the barriers to implementing interventions or taking action (e.g., jurisdictional issues or needs for communication and education), and (4) what contributions can various actors across sectors and disciplines make toward progress? To help answer the questions and consider the full breadth of components to any issue, the pilot committee developed a model describing the environmental health ecosystem and its actors, including the National Academies.

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<sup>3</sup> See <https://www.nationalacademies.org/event/10-12-2021/communities-climate-change-and-health-equity-a-new-vision>

*Capture Expert Insights in Opportunities for Progress.* Ultimately, consideration of the questions described above will lead to workshops that focus on describing needs and opportunities for leadership from a range of sectors. The results of these workshop discussions will be captured in a proceedings product with innovative formatting – an opportunities for progress—that communicates actions and opportunities that are identified by participants during the workshop to move from problems to action steps. This effort will indicate whether the National Academies needs to play a further role beyond “advancing solutions” described in the next section, for example, a consensus study or other activity that delves more deeply into specific questions.

The “opportunities for progress” product is envisioned as containing content similar to that in a typical proceedings (with attribution, etc.) but in a different, digital format. An initial consultation with the Report Review Committee (RRC) staff has taken place, and the EHMI staff will work iteratively with the RRC staff in moving forward. The presentation format is being refined but is expected to resemble the scrolling page developed as a dissemination product from a workshop proceedings on Strategies to Limit Sugar-Sweetened Beverage Consumption in Young Children (<https://www.nap.edu/resource/24910>). In this model, leadership opportunities will be organized and presented by sector in an easily-communicated format. Opportunities will be attributed to workshop participants and/or groups of workshop participants and not presented as consensus statements. Following the “digital first” strategy, a rapporteur will be designated to prepare the content base that is subject to review.

### 3) Advance Solutions

The EHMI will work to advance science-informed thinking on how to address complex environmental health issues by disseminating “opportunities for progress,” building awareness and an appetite for progress, and in many cases taking further steps to catalyze action.

*Disseminating Opportunities for Progress.* Opportunities for progress will be shared through various methods (e.g., digital blueprints, written briefs, and short videos) and outlets (e.g., EHMI website and outreach, peer-reviewed scientific literature, social media, and sector-specific media) to ensure that information about needs and opportunities reaches those actors who can effect change in their communities, corporations, organizations, and/or government.

*Building Awareness and an Appetite for Progress.* EHMI and its activities will strive to advance the understanding of the link between the health of the environment and the health of the population. Educating the broad society on the link between the environment and health (or creating materials that others can use) is key to developing a climate that is receptive and encouraging of substantive change.

*Catalyzing Action.* The EHMI staff will work with the committee, liaisons, and other meeting participants to determine how best to leverage the work of the opportunities for progress meetings to further catalyze action within the available resources and participant commitments. Options might include participant-driven working groups, commentaries authored by participants and influential leaders, or development of communication materials around a specific area of interest.

## **Appendix C**

### **Biographies of Key Staff**

**Kavita Berger, Ph.D.,** is the Board Director of the Board on Life Science of the National Academies of Sciences, Engineering, and Medicine. She is a life scientist with extensive experience in the addressing a diversity of

technical, policy, and societal issues associated with the life sciences and biotechnology. Dr. Berger leads and oversees the Board's work across a variety of life science areas, including basic, applied, and emerging life sciences research; biotechnology research and convergence; bioeconomy-related research and development; biosecurity and biodefense; ecology and biodiversity; and integrated human, animal, plant, and ecological health. Prior to joining the National Academies, Dr. Berger was a principal scientist at Gryphon Scientific. There, she led numerous projects involving biotechnology landscape analyses, biosecurity and biodefense policy, risk and benefits of life science research and technologies, and international bioengagement. Dr. Berger was responsible for several biosecurity and biodefense initiatives at the American Association for the Advancement of Science, including a meeting series on topics ranging from health security to biological weapons. These efforts provided opportunities for scientists and security policy experts to understand and consider broader implications of science and technology. Dr. Berger has a Ph.D. in genetics and molecular biology from Emory University.

**Audrey Thévenon, Ph.D.**, is a Senior Program Officer for the Board on Life Sciences at the National Academies of Sciences, Engineering, and Medicine, where she also leads the Response and Resilient Recovery Strategic Science Initiative, a cross-Academies activity launched to run prospective crisis management scenarios related to COVID-19. Since joining the National Academies, Audrey supported collaborative regional and international activities at the intersection of infectious disease research and policy decision intended explicitly at promoting transdisciplinary research in global health, including a One-Health fellowship program in Pakistan. Audrey led and co-led activities aimed at sustaining biological collections for research and education, increasing biosafety and biosecurity capacity and training opportunities, informing about the potential risks and benefits of infectious disease and genome editing research, and promoting an integrated approach to solving issues at the intersection of animal, environmental, and human health. Prior to the National Academies, Audrey completed a postdoctoral fellowship at the University of Hawaii in placental pharmacology, followed by another fellowship at the Uniformed Services University of the Health Sciences in Bethesda, Maryland working on two HIV-Malaria projects in collaboration with Nigeria and Kenya research teams. Audrey has a Ph.D. and an M.S. both in biology from Georgetown University with a specialization in tropical medicine and immunology, as well as an M.S. in cell biology and physiology from the University of Rennes in France.

**Alex Reich, M.S.**, is a Program Officer with the Board on Atmospheric Sciences and Climate at The National Academies, where he coordinates institution-wide climate engagement efforts; leads workshops on communities, climate change, and health equity; and contributes to consensus reports on decarbonization and global change research. He also develops new projects and serves on a strategic plan working group advising the National Academies how to become more innovative. Prior to The National Academies, Alex co-founded the educational YouTube channel MinuteEarth, where he engaged a global audience of 2 million around the questions of how society can achieve meaningful changes that allow all people to live healthier, happier, more sustainable lives. Alex earned a BA in biology from Grinnell College, where he is now a member of the Sustainability Committee, and an MS in Natural Resources Science and Management from the University of Minnesota, where he is now a Visiting Scholar at the Institute on the Environment. Previously, as a Thomas J. Watson Fellow, he used food as a lens to learn about how Arctic indigenous peoples are adapting to climate change and globalization, learning about both the inequities of environmental impacts and the resiliency of human communities.

**Abigail Ulman, B.S.**, (she/her) joined the National Academies as a Research Assistant for the Environmental Health Matters Initiative and the Board on Chemical Sciences and Technology in March 2021. Previously, Abigail managed stakeholder communication and conducted research for an HIV prevention strategy at the O'Neill Institute for National and Global Health Law's Center for Innovation in Global Health. Prior to joining O'Neill, Abigail served in the Peace Corps in Senegal as a Sustainable Agriculture Extension Agent, where she designed grassroots community development projects to improve food security in the community. Abigail holds a BS, cum laude, in science, technology, and international affairs with a focus on environmental health and a minor in Chinese from Georgetown University's Walsh School of Foreign Service.

**Emma Shulman, B.S., (she/her)** is a Program Assistant with the Board on Chemical Sciences and Technology and the Environmental Health Matters Initiative at The National Academies of Sciences, Engineering, and Medicine. Emma previously worked at the Milton Gottesman School as a science teacher, where she helped to design an elementary science curriculum as well as teaching biology, chemistry, and physics to students in grades 6-8. Prior to this, she worked as an assistant marine mammal trainer at Sea Life Park Hawaii, and in marine mammal husbandry at Mystic Aquarium, working with California sea lions, dolphins, and sea birds. Emma holds a Bachelor's degree in Biology from the University of Florida and currently lives in Washington, D.C.

**Kossana Young** is a communications assistant at the National Academies of Sciences, Engineering, and Medicine in the division on earth and life studies. Her communications interests at the Academies are centered on environmental health, life sciences, public health and resources. Kossana is also an MPH student at UNC Chapel Hill Gillings School of Global Public Health concentrating on health inequities and nutrition epidemiology. Kossana has a background in technical communication, science communication, and public health, with specialties in outreach, digital design, program logistics, event coordination, virtual meetings, publication management, editing, and writing. Currently, she is an interning with the Postnatal Safety Learning Lab where she is serving as a communications representative. This work specializes in implementation of integrated care, health service transitions, research and innovation.

**Lida Beninson, Ph.D.,** is a Senior Program Officer and Study Director with the Transportation Research Board at the National Academies of Sciences, Engineering, and Medicine. With experiences in science and technology policy, higher education policy, defense policy, biomedical research, STEM training and workforce development, exercise physiology, and data science, Lida pursues opportunities to serve society through her diverse scientific expertise. Prior to directing a diverse portfolio of studies and projects at the National Academies, she served as an AAAS Science and Technology Policy Fellow with the National Science Foundation's Computer and Information Science and Engineering (CISE) directorate. Lida was also Editor-in-Chief for The Journal of Science Policy and Governance and a recipient of the AIBS Emerging Public Policy Leadership Award. Lida received a Ph.D. in Integrative Physiology and graduate certificate in Science and Technology Policy from the University of Colorado at Boulder, and her B.A. with a double concentration in Neuropsychology and Education from Princeton University.

**Daniel Burger, M.S.,** is a Senior Program Manager for the National Academies of Sciences, Engineering, and Medicine within the Gulf Research Program (GRP). Mr. Burger leads the work of the Gulf Health and Resilience Board, which funds applied research and supports projects and other activities that advance the scientific evidence base and promote understanding of complex health and community resilience topics. Prior to joining the GRP leadership team in 2020, Mr. Burger worked in Charleston, SC for over 15 years in support of federal, state and localized coastal zone management, hazard mitigation and resilience planning efforts. Dan is also a founder and former chair of the Charleston Resilience Network, a collaborative effort among public, private, academic and non-governmental organizations to enhance regional decision-making and improve the resilience of social, physical and economic systems. Dan has served on numerous regional and national advisory boards, including an appointment to the National Academies Resilient America Roundtable. Prior to his work in South Carolina, Dan worked to advance environmental public policy and build the capacity of nonprofit organizations in Maryland. He is an honors graduate of Western Maryland (McDaniel) College and holds a Master of Public Administration in urban public affairs from the College of Charleston.

**David Butler, Ph.D.,** is scholar in the Health and Medicine Division and Director of the Office of Military and Veterans Health. Before joining the National Academies, Dr. Butler served as an analyst for the U.S. Congress Office of Technology Assessment, was a research associate in the Department of Environmental Health of the Harvard School of Public Health, and performed research at Harvard's Kennedy School of Government. He has directed several National Academies studies on environmental health and risk assessment topics, including ones that produced Climate Change, the Indoor Environment, and Health; Damp Indoor Spaces and Health; Clearing the Air: Asthma and Indoor Air Exposures; and Health Risks of Indoor Exposure to Particulate Matter: Workshop

Summary. Dr. Butler has also been lead staff officer for a number of reports on the effects of environmental exposures on the health of active duty military personnel and veterans, including volumes of the Veterans and Agent Orange report series. He is a recipient of the Cecil Award, the highest distinction for a staff member of the National Academy of Medicine (formerly Institute of Medicine). Dr. Butler received his B.S. and M.S. in engineering from the University of Rochester and his Ph.D. in public policy analysis from Carnegie Mellon University.

**Franklin A. Carrero-Martínez, Ph.D.** directs the Science and Technology for Sustainability Program within the Policy and Global Affairs Division of the National Academies. Prior to this appointment, Dr. Carrero-Martínez was the Acting Deputy Science and Technology Adviser to the Secretary of State. Dr. Carrero-Martínez holds a B.S. in Biology, with honors from the University of Puerto Rico (UPR), a Ph.D. in Cell and Developmental Neurobiology, and a Certificate in Business Administration from the University of Illinois at Urbana-Champaign. His multidisciplinary career includes several roles in academia and government: from researcher and educator, science administrator, to science policy and diplomacy.

**Charlene Milliken, Ph.D.** is a Senior Program Manager in the Gulf Research Program (GRP) at the National Academies of Sciences, Engineering, and Medicine (National Academies) where she co-leads the Health and Resilience Unit and leads the Enhancing Community Resilience (EnCoRe) Initiative. The Health and Resilience Unit supports research and activities that develop approaches and solutions to advance science and understanding in health and community resilience. EnCoRe is a community engagement program that applies science in select communities to support local health and community resilience efforts in the U.S. Gulf Coast region, specifically focusing on building community capacity in climate resilience and health equity. Prior to the GRP, Dr. Milliken managed programs and projects in the Resilient America Program in the National Academies' Policy & Global Affairs Division, partnering with communities to build and enhance community resilience to disasters. Before coming to the National Academies, she spent seven years at the Department of Homeland Security Science and Technology (S&T) Directorate participating in programs and activities related to community resilience to disasters, terrorism, and technology transition. Dr. Milliken was a AAAS National Defense and Global Security S&T Fellow (2007-2009) and a DHS Research Fellow (2009-2012). She has a B.A. in international relations from the University of Southern California and Ph.D. in anthropology from the University of Pittsburgh.

**Amanda Staudt, Ph.D.** directs the Board on Atmospheric Sciences and Climate (BASC) and the Polar Research Board (PRB) at the National Academies. Amanda leads strategic planning, guides project development, and provides institutional oversight for both boards. From 2007-2013, Amanda was a senior climate scientist at the National Wildlife Federation. In that role, she focused on communicating climate science and impacts with key decision makers and the general public, developing the intellectual and practical foundation for climate-informed conservation, and advancing climate change science education. She served on the steering committee for Impacts of Climate Change on Biodiversity, Ecosystems, and Ecosystem Services: Technical Input to the 2013 National Climate Assessment, and was an editor of Climate-Smart Conservation: Putting Adaptation Principles into Practice, a 2014 guidance produced by an expert workgroup including representatives from government, nonprofits, and academia. Prior to her time at NWF, Amanda was a senior program officer for BASC, where she directed the Climate Research Committee and a number of high-profile studies, including the fast-track review of the UD Climate Change Science Program Strategic Plan, and studies on weather research for surface transportation and radiative forcing effects on climate. She also spearheaded the development of the National Academies' first booklet on climate change targeted to public audiences. Amanda received her BA cum laude in environmental science and engineering from Harvard College and her PhD in atmospheric sciences from Harvard University.

**Kathleen Stratton, Ph.D.**, began her career at the National Academies of Sciences, Engineering, and Medicine in 1990 in the Institute of Medicine. She has spent most of her time with the Board on Population Health and Public Health Practice. Dr. Stratton has staffed committees addressing vaccine safety and development, pandemic preparedness, environmental and occupational health, drug safety, and tobacco control. She was given the IOM

(now HMD, Health and Medicine Division) Cecil Research Award for sustained contributions to vaccine safety and was made a staff Scholar in 2005. After two years at The Pew Charitable Trusts working on FDA reform, she returned to HMD in fall 2013 to direct the Roundtable on Environmental Health Sciences, Research, and Medicine and the Committee on the Health Implications of Raising the Minimum Purchase Age for Tobacco. She most recently directed studies on accounting for socioeconomic status in Medicare payment programs and on the health effects of electronic cigarettes. She received a B.A. in Natural Sciences from The Johns Hopkins University and a Ph.D. in Pharmacology and Toxicology at the University of Maryland at Baltimore. She conducted post-doctoral research in the Department of Neuroscience at the Johns Hopkins School of Medicine.

**Scott Wollek, M.S.**, is a senior program officer with the Board of Health Sciences Policy, where he is Director of the Standing Committee for the CDC Strategic National Stockpile and the Standing Committee on Health Threats and Workforce Resilience. His primary interests focus on relationship networks, capacity building and network governance as applied to emergency management and public health emergency preparedness. Prior to joining The Academies, Mr. Wollek served as the Senior Disaster Program Manager at The American Red Cross in the National Capital Region. In that role, he was responsible for the management of preparedness, response and recovery programs throughout the National Capital Region, including the response to over 500 local disasters each year. In his eleven years with the Red Cross, Mr. Wollek held a variety of paid and volunteer staff positions involving local disaster response, training, exercises, plans and operations. Mr. Wollek served in leadership positions during disasters and special events including the 2009 and 2013 Presidential Inaugurations, 2010 blizzard and the NCR response to Hurricane Irene, Tropical Storm Lee, the 2012 derecho, Hurricane Sandy, and the shootings at the Washington Navy Yard. Mr. Wollek holds a Bachelor's Degree in Emergency Health Services from The George Washington University and a Master's Degree in Public Administration, with a concentration in Homeland Security and Emergency Management, from George Mason University. He maintains active membership in The American Society for Public Administration, The International Association of Emergency Managers, and the Virginia Emergency Management Association.

**Elizabeth (Beth) Zeitler, Ph.D.**, is Associate Board Director of the Board on Energy and Environmental Systems at the National Academies of Sciences, Engineering and Medicine. Across the Academies, she leads consensus studies to inform government, private and public sector decisionmakers on key areas of domestic and global energy policy, such as technologies for vehicle energy efficiency, the future of the electric system, and technical and policy needs for deep decarbonization. She has previously led and supported projects in the future of electrochemistry, carbon utilization, data, modeling and simulation for urban sustainability, vehicle technologies, electric vehicle deployment and energy resource potential on DOE lands. Beth received a Ph.D. in Chemistry from Princeton in 2014, and has previously served as a Christine Mirzayan Fellow at the Academies and as an AAAS STPF Fellow at the U.S. foreign assistance agency, the Millennium Challenge Corporation.



THE NATIONAL ACADEMY OF SCIENCES

DIVISION ON EARTH AND LIFE STUDIES

DIVISION ON EARTH AND LIFE STUDIES EXECUTIVE OFFICE

Proposal No. 10005791

Provision of Scientific and Technical Expertise for Environmental Public Health Issue Workshops/Business Meetings

EPA Cumulative Summary Estimate of Costs

**Ex. 4 CBI**

via Letter of Credit or electronic transfer.

Footnote: These major cost categories reflect the billing structure used by the National Academy of Sciences. Cost and rate data are attached as background information. Please be advised, however, that all costs are systematically collected in our accounting system and are available for audit through arrangements with the Defense Contract Audit Agency and our cognizant Administrative Contracting Officer at the Office of Naval Research.

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Estimate of Costs

3/14/22

3/13/23

**Ex. 4 CBI**

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Proposal No. 10005791

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Estimate of Costs

3/14/23

3/13/24

12 months

**Ex. 4 CBI**

# Ex. 4 CBI

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